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HIGH ROCK LAKE DAVIDSON AND ROWAN COUNTIES NORTH CAROLINA

Pacific Northwest Environmental Research Laboratory

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

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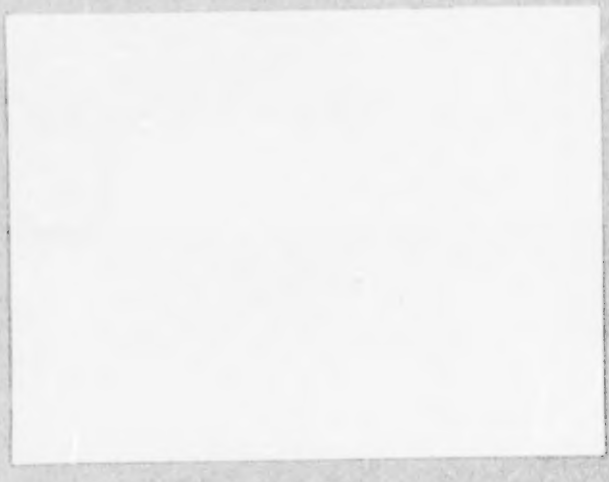

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REPORT
ON
HIGH ROCK LAKE
DAVIDSON AND ROWAN COUNTIES
NORTH CAROLINA
EPA REGION IV
WORKING PAPER No. 381

WITH THE COOPERATION OF THE
NORTH CAROLINA DEPARTMENT OF NATURAL AND ECONOMIC RESOURCES
AND THE
NORTH CAROLINA NATIONAL GUARD
JUNE, 1975

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the North Carolina Department of Natural and Economic Resources for professional involvement and to the North Carolina National Guard for conducting the tributary sampling phase of the Survey.

Lewis R. Martin, Director of the Division of Environmental Management; Darwin L. Coburn, Chief of the Water Quality Section; and Julian R. Taylor, Supervisor of the Monitoring Program Unit; provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

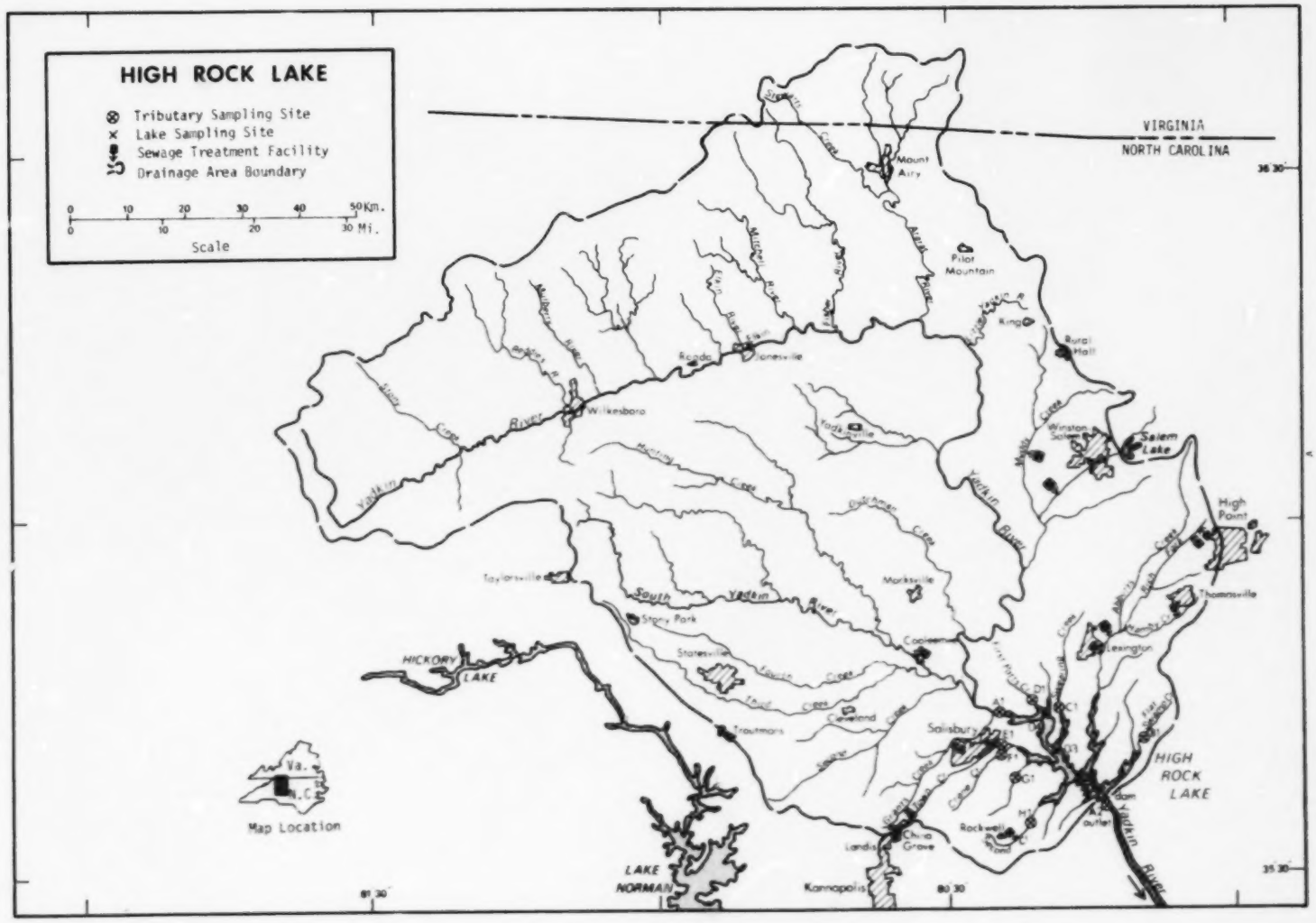
Major General William M. Buck, formerly Adjutant General of North Carolina, and Project Officer Colonel Arthur J. Bouchard, who directed the volunteer efforts of the North Carolina National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF NORTH CAROLINA

LAKE NAME	COUNTY
Badin	Montgomery, Stanly
Blewett Falls	Anson, Richmond
Chatuge	Clay, NC; Towns, GA
Fontana	Graham, Swain
Hickory	Alexander, Caldwell, Catawba
High Rock	Davidson, Rowan
Hiwassee	Cherokee
James	Burke, McDowell
John H. Kerr (Nut Bush Creek)	Granville, Vance, Warren, NC; Halifax, Mecklenburg, VA
Junaluska	Haywood
Lookout Shoals	Alexander, Catawba, Iredell
Mountain Island	Gaston, Mecklenburg
Norman	Catawba, Iredell, Lincoln, Mecklenburg
Rhodhiss	Burke, Caldwell
Santeetlah	Graham
Tillery	Montgomery, Stanly
Waccamaw	Columbus
Waterville	Haywood
Wylie	Gaston, Mecklenburg, NC; York, SC


HIGH ROCK LAKE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
0 10 20 30 40 50 Km.
0 10 20 30 Mi.
Scale
VIRGINIA
NORTH CAROLINA
Mount Airy
Pilot Mountain
Yadkin River
Ararat River
Mitchell River
Stewarts Creek
Elkin
Jonesville
Rockford
Wilkesboro
Mulberry River
Fisher River
Little Yadkin River
Yadkin Creek
Roaring River
Elkin Creek
Reddies River
Yadkinville
Mocksville
Taylorsville
South Yadkin River
Statesville
Third Creek
Fourth Creek
Cowan Creek
Troutmans
Coddle Creek
Cooleemee
Salisbury
Rowan
Davie
Iredell
Alexander
Catawba
Lincoln
Gaston
Cabarrus
Stanly
Union
Anson
Richmond
Montgomery
Davidson
Randolph
Guilford
Forsyth
Stokes
Surry
Alleghany
Ashe
Wilkes
Caldwell
Burke
Rutherford
Polk
Cleveland
Lincolnton
Gastonia
Kings Mountain
Shelby
Rutherfordton
Forest City
Rural Hall
Winston Salem
Salem Lake
High Point
Thomasville
Lexington
Asheboro
Rockwell
China Grove
Landis
Kannapolis
HICKORY LAKE
LAKE NORMAN
HIGH ROCK LAKE
Yadkin River
Va.
N.C.
Map Location
81 30'
80 30'
36 30'
35 30'

/

HIGH ROCK LAKE

STORET NO. 3706

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate that High Rock Lake is eutrophic. However, because this lake has a relatively short hydraulic retention time of 27 days, it more closely resembles a slow-moving river; and the term "over-enriched" may be a more appropriate description of the condition of this water body.

High Rock Lake ranked last in overall trophic quality when the 16 North Carolina lakes sampled in 1973 were compared using a combination of six parameters*. Thirteen lakes had less and one had the same median total phosphorus, 12 had less median dissolved phosphorus and inorganic nitrogen, 15 had less mean chlorophyll a, and 15 had greater mean Secchi disc transparency.

Survey limnologists noted emergent vegetation along the shore near station 4 during the July sampling. Water quality deterioration is indicated by marked dissolved oxygen depression with depth at stations 1 and 2 in July, a 20-fold increase in phytoplankton numbers and a significant rise in chlorophyll a concentrations in July and September, 1973.

* See Appendix A.

B. Rate-Limiting Nutrient:

The algal assay results indicate phosphorus limitation at the time the sample was collected (03/24/73). The lake data also indicate phosphorus limitation; at all sampling stations and times, the mean inorganic nitrogen to ortho-phosphorus ratios were 14 to 1 or greater.

C. Nutrient Controllability:

1. Point sources--The phosphorus load from point sources was at least 31.4% of the total load reaching High Rock Lake during the sampling year. Wastewater treatment plant loads ranged from 15.9% of the total (Winston-Salem) to less than 0.1% (High Point Country Club).

The present phosphorus loading rate of 14.78 $g/m^2/yr$ is over 9 times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic rate (see page 14); and while Vollenweider's model may not be applicable to water bodies with short hydraulic retention times, the existing trophic condition of High Rock Lake is evidence of excessive nutrient loads.

Much of the point-source phosphorus load reaching High Rock Lake originated outside the 40-kilometer Survey limit* (Anonymous, 1973). While reduction or elimination of phosphorus at

* See Working Paper No. 175, "...Survey Methods, 1973-1976".

the wastewater treatment plants listed in this report would aid in improving the trophic condition of High Rock Lake, phosphorus loads from the other point sources throughout the basin also should be controlled to provide the maximum benefit to this lake as well as to downstream lakes Badin (Working Paper No. 377), Tillery (Working Paper No. 390), and Blewitt Falls (Working Paper No. 378).

Unless a phosphorus reduction program is initiated, the present high phosphorus loadings to High Rock Lake can be expected to cause further deterioration in the trophic quality.

2. Non-point sources--The phosphorus load from non-point sources amounted to 68.5% of the total load reaching the lake during the sampling year. The contribution reported for the Yadkin River at station A-1 is considered to include point source loads that are outside the 40-kilometer limit as noted above. Also, other tributaries--Swearing Creek (C-1), Town Creek (E-1), and Crane Creek (F-1)--are suspected to have been influenced by point sources since the export nitrogen to phosphorus ratios were quite low and the phosphorus export values were quite high (see page 14). Those tributaries believed not to be influenced by point sources (Flat Swamp Creek and First Potts Creek) had relatively low phosphorus loading rates of 7 and 10 kg/km^2/yr, respectively.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 64.29 kilometers^2.
2. Mean depth: 4.9 meters.
3. Maximum depth: >15.8 meters.
4. Volume: 314 x 10^6 m^3.
5. Mean hydraulic retention time: 27 days (based on outlet flow).

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)	Mean flow (m^3/sec)
Yadkin River	9,013.2	121.5
Flat Swamp Creek	50.8	0.4
Swearing Creek	100.5	1.0
First Potts Creek	41.4	0.3
Town Creek	49.2	0.6
Crane Creek	69.9	0.9
Unnamed Creek (G-1)	46.6	0.5
Second Creek	88.1	0.4
Minor tributaries & immediate drainage -	836.0	11.0
Totals	10,295.7	136.6

2. Outlet -

Yadkin River	10,360.0**	136.7

C. Precipitation***:

1. Year of sampling: 129.4 centimeters.
2. Mean annual: 120.2 centimeters.

† Table of metric conversions--Appendix B.
†† Park, 1974.
* For limits of accuracy, see Working Paper No. 175.
** Includes area of lake.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

High Rock Lake was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from four stations on the lake and from one or more depths at each station (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the four stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 15.8 meters at station 1, 9.1 meters at station 2, 4.9 meters at station 3, and 1.5 meters at station 4.

The lake sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR HIGH ROCK LAKE
STORET CODE 3706

	1ST SAMPLING (3/24/73) 4 SITES			2ND SAMPLING (7/11/73) 4 SITES			3RD SAMPLING (9/19/73) 4 SITES		
PARAMETER	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN	RANGE	MEAN	MEDIAN
TEMP (C)	10.3 - 12.2	11.1	11.1	24.1 - 30.9	27.3	27.8	23.0 - 25.9	24.5	24.7
DISS OXY (MG/L)	8.6 - 9.8	9.2	9.2	0.2 - 10.2	4.6	6.2	3.3 - 8.0	6.3	6.8
CNDCTVY (MCROMO)	51. - 67.	59.	59.	60. - 85.	68.	67.	59. - 76.	69.	73.
PH (STAND UNITS)	7.1 - 7.4	7.3	7.3	6.5 - 9.3	7.3	7.1	6.5 - 7.2	6.8	6.8
TOT ALK (MG/L)	10. - 13.	10.	10.	17. - 26.	22.	22.	19. - 28.	23.	23.
TOT P (MG/L)	0.095 - 0.163	0.134	0.137	0.039 - 0.092	0.066	0.065	0.034 - 0.129	0.066	0.066
ORTHO P (MG/L)	0.018 - 0.033	0.022	0.020	0.005 - 0.054	0.013	0.009	0.010 - 0.018	0.014	0.014
NO2+NO3 (MG/L)	0.420 - 0.540	0.463	0.455	0.100 - 0.460	0.278	0.295	0.080 - 0.320	0.184	0.160
AMMONIA (MG/L)	0.100 - 0.200	0.161	0.155	0.080 - 0.670	0.243	0.170	0.050 - 0.230	0.084	0.070
KJEL N (MG/L)	0.200 - 0.600	0.389	0.400	0.400 - 1.000	0.707	0.700	0.500 - 0.980	0.646	0.680
INORG N (MG/L)	0.560 - 0.690	0.624	0.625	0.220 - 0.910	0.521	0.470	0.150 - 0.550	0.268	0.220
TOTAL N (MG/L)	0.620 - 1.050	0.852	0.850	0.710 - 1.210	0.985	0.980	0.580 - 1.140	0.830	0.860
CHLRPYL A (UG/L)	1.4 - 5.9	3.8	3.9	8.7 - 24.2	15.7	14.9	19.0 - 27.5	23.3	23.4
SECCHI (METERS)	0.3 - 0.3	0.3	0.3	0.6 - 0.8	0.7	0.8	0.5 - 1.0	0.8	0.8

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
03/24/73	1. Flagellates	477
	2. Ankistrodesmus	106
	3. Nitzschia	35
	4. Trachelomonas	35
	5. Unknown filaments	35
	Other genera	107
	Total	795
07/11-12/73	1. Raphidiopsis	7,668
	2. Oscillatoria	1,945
	3. Microcystis	1,723
	4. Pennate diatoms	778
	5. Lyngbya	611
	Other genera	2,280
	Total	15,005
09/19/73	1. Raphidiopsis	11,637
	2. Flagellates	1,727
	3. Blue-green filaments	740
	4. Stephanodiscus	411
	5. Merismopedia	329
	Other genera	1,729
	Total	16,573

2. Chlorophyll *a* -

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
03/24/73	01	5.9
	02	4.9
	03	1.4
	04	3.0
07/11-12/73	01	24.2
	02	8.7
	03	12.6
	04	17.3
09/19/73	01	20.2
	02	27.5
	03	19.0
	04	26.7

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.032	0.520	8.6
0.050 P	0.082	0.520	11.6
0.050 P + 1.0 N	0.082	1.520	27.4
1.0 N	0.032	1.520	8.6

2. Discussion -

The control yield of the assay alga, *Selenastrum capricornutum*, indicates that the potential primary productivity of High Rock Lake was high at the time the sample was collected (03/24/73). The addition of phosphorus alone resulted in an increased yield indicating phosphorus limitation. Note that addition of nitrogen alone did not result in an increased yield.

The lake data further substantiate limitation by phosphorus. At all sampling stations and times, the mean inorganic nitrogen to orthophosphorus ratios were 14 to 1 or greater.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the North Carolina National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of January and February when two samples were collected. Sampling was begun in March, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the North Carolina District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus any point-source loads.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient loads, in $kg/km^2/year$, at stations B-1 and D-1 and multiplying the means by the ZZ area in km^2.

The operators of the China Grove, Salisbury (Town Creek and Grants Creek), Rockwell, Thomasville, Landis, Lexington (Abbots Creek plants),

* See Working Paper No. 175.

West Plant-High Point, County Club-High Point, and the Burlington Industries/Cooleemee wastewater treatment plants provided monthly effluent samples and corresponding flow data. The City of Winston-Salem did not participate in the Survey, and nutrient loads were estimated at 1.134 kg P and 3.401 kg N/capita/year.

A. Waste Sources:

1. Known muncipal† -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
China Grove	2,000	trickling filter	908.4	Grants Creek
Town Creek-Salisbury*	10,000	act. sludge	14,027.2	Town Creek
Rockwell*	725	trickling filter	352.0	Second Creek
Grants Creek-Salisbury*	15,000	act. sludge	13,487.7	Grants Creek
Thomasville*	16,000	act. sludge	7,416.5	Hamby Creek
Landis*	2,300	act. sludge	2,786.1	Grants Creek
Lexington-Abbots Creek #1*	4,600	act. sludge	3,043.1	Abbots Creek
Lexington-Abbots Creek #2*	4,000	aer. pond	3,576.8	Abbots Creek
West Plant High Point*	17,000	act. sludge	12,547.3	Rich Fork
Country Club High Point	22	sand filter	3.8	Rich Fork
Burlington Industries/ Cooleeme*	1,800	act. sludge	1,514.0	South Yadkin River
Winston-Salem (2 plants)	132,913**	act. sludge, trickling filter	50,307.6***	Salem Creek and Muddy Creek to Yadkin River

2. Known industrial - None

† Treatment plant questionnaires.
* Includes industrial wastes.
** 1970 Census.
*** Flow estimate based on 0.3785 m^3/capita/day.

3. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Yadkin River	599,345	63.1
Flat Swamp Creek	360	<0.1
Swearing Creek	15,755	1.7
First Potts Creek	430	<0.1
Town Creek	18,965	2.0
Crane Creek	6,875	0.7
Unnamed Creek (G-1)	570	0.1
Second Creek	950	0.1
b. Minor tributaries & immediate drainage (non-point load) -	7,355	0.8
c. Known municipal STP's -		
China Grove	2,580	0.3
Town Creek-Salisbury	21,460	2.3
Grants Creek-Salisbury	28,525	3.0
Rockwell	1,265	0.1
Thomasville	22,085	2.3
Landis	16,720	1.8
Lexington #1	9,735	1.0
Lexington #2	14,520	1.5
West Plant High Point	28,775	3.0
Country Club High Point	15	<0.1
Burlington Industries/ Cooleemee	1,940	0.2
Winston-Salem	150,725	15.9
d. Septic tanks - Unknown	-	-
e. Known industrial - None	-	-
f. Direct precipitation* -	1,125	0.1
Total	950,075	100.0

2. Outputs -

Lake outlet - Yadkin River 437,005

3. Net annual P accumulation - 513,070 kg.

* See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Yadkin River	4,401,410	78.3
Flat Swamp Creek	10,750	0.2
Swearing Creek	54,195	1.0
First Potts Creek	9,315	0.2
Town Creek	24,075	0.4
Crane Creek	35,290	0.6
Unnamed Creek (G-1)	8,535	0.2
Second Creek	16,670	0.3
b. Minor tributaries & immediate drainage (non-point load) -	182,500	3.2
c. Known municipal STP's -		
China Grove	3,905	0.1
Town Creek-Salisbury	90,495	1.6
Grants Creek-Salisbury	69,005	1.2
Rockwell	2,730	<0.1
Thomasville	41,985	0.7
Landis	9,890	0.2
Lexington #1	15,530	0.3
Lexington #2	21,615	0.4
West Plant High Point	93,920	1.7
Country Club High Point	30	<0.1
Burlington Industries/ Cooleemee	5,475	0.1
Winston-Salem	452,035	8.1
d. Septic tanks - Unknown	-	-
e. Known industrial - None	-	-
f. Direct precipitation* -	69,405	1.2
Total	5,618,760	100.0

2. Outputs -

Lake outlet - Yadkin River 5,529,775

3. Net annual N accumulation - 88,985 kg.

* See Working Paper No. 175.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr	N/P ratio
Yadkin River	66	488	7/1
Flat Swamp Creek	7	212	30/1
Swearing Creek	157	539	3/1
First Potts Creek	10	225	22/1
Town Creek	385	489	1.3/1
Crane Creek	98	505	5/1
Unnamed Creek (G-1)	12	183	15/1
Second Creek	11	189	17/1

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m²/yr	14.78	7.98	87.4	1.4

Vollenweider loading rates for phosphorus (g/m²/yr) based on mean depth and mean hydraulic retention time of High Rock Lake:

"Dangerous" (eutrophic rate)	1.52
"Permissible" (oligotrophic rate)	0.76

V. LITERATURE REVIEWED

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Park, Dave, 1974. Personal communication (lake morphometry). NC Dept. of Nat. & Econ. Resources, Raleigh.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	3719	LAKE WACCAMAW	534
2	3716	SANTEELAH LAKE	446
3	3711	MOUNTAIN ISLAND LAKE	419
4	3707	HIWASSEE LAKE	414
5	3704	FONTANA LAKE	392
6	3713	LAKE NORMAN	346
7	3708	LAKE JAMES	334
8	3710	LOOKOUT SHOALS	327
9	3715	RHODHISS LAKE	296
10	3705	LAKE HICKORY	283
11	3717	LAKE TILLERY	246
12	3709	LAKE JUNALUSKA	220
13	3702	BLEWETT FALLS LAKE	200
14	3718	WATERVILLE RESERVOIR	140
15	3701	BADIN LAKE	124
16	3706	HIGH ROCK LAKE	76

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
3701	BADIN LAKE	33 (5)	7 (1)	27 (4)	27 (4)	3 (0)	27 (4)	124
3702	BLEWETT FALLS LAKE	7 (1)	13 (2)	7 (1)	73 (11)	93 (14)	7 (1)	200
3704	FONTANA LAKE	100 (15)	33 (5)	93 (14)	100 (15)	3 (0)	63 (9)	392
3705	LAKE HICKORY	27 (4)	60 (9)	53 (8)	13 (2)	80 (12)	50 (7)	283
3706	HIGH ROCK LAKE	13 (2)	20 (3)	0 (0)	0 (0)	23 (2)	20 (3)	76
3707	HIWASSEE LAKE	87 (13)	80 (12)	87 (13)	47 (7)	50 (7)	63 (9)	414
3708	LAKE JAMES	60 (9)	87 (13)	80 (12)	7 (1)	23 (2)	77 (11)	334
3709	LAKE JUNALUSKA	47 (7)	27 (4)	43 (6)	20 (3)	50 (7)	33 (5)	220
3710	LOOKOUT SHOALS	53 (8)	47 (7)	60 (9)	67 (10)	60 (9)	40 (6)	327
3711	MOUNTAIN ISLAND LAKE	73 (11)	73 (11)	43 (6)	53 (8)	87 (13)	90 (13)	419
3713	LAKE NORMAN	67 (10)	53 (8)	73 (11)	40 (6)	23 (2)	90 (13)	346
3715	RHODHISS LAKE	20 (3)	67 (10)	33 (5)	93 (14)	70 (10)	13 (2)	296
3716	SANTEELAH LAKE	93 (14)	93 (14)	100 (15)	60 (9)	23 (2)	77 (11)	446
3717	LAKE TILLERY	40 (6)	40 (6)	13 (2)	33 (5)	70 (10)	50 (7)	246
3718	WATERVILLE RESERVOIR	0 (0)	0 (0)	20 (3)	80 (12)	40 (6)	0 (0)	140
3719	LAKE WACCAMAW	80 (12)	100 (15)	67 (10)	87 (13)	100 (15)	100 (15)	534

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
3701	BADIN LAKE	0.042	0.680	466.750	7.190	14.900	0.012
3702	BLEWETT FALLS LAKE	0.090	0.655	476.889	4.167	10.800	0.034
3704	FONTANA LAKE	0.011	0.550	392.650	3.438	14.900	0.007
3705	LAKE HICKORY	0.047	0.320	461.000	7.275	13.400	0.008
3706	HIGH ROCK LAKE	0.090	0.580	477.454	14.283	14.800	0.017
3707	HIWASSEE LAKE	0.015	0.240	420.555	5.678	14.200	0.007
3708	LAKE JAMES	0.020	0.160	428.866	7.660	14.800	0.006
3709	LAKE JUNALUSKA	0.031	0.560	462.000	7.233	14.200	0.009
3710	LOOKOUT SHOALS	0.026	0.370	459.167	4.200	13.800	0.008
3711	MOUNTAIN ISLAND LAKE	0.018	0.270	462.000	5.580	12.800	0.005
3713	LAKE NORMAN	0.019	0.330	446.667	5.807	14.800	0.005
3715	RHODHISS LAKE	0.061	0.305	462.111	3.578	13.600	0.019
3716	SANTEELAH LAKE	0.011	0.160	366.400	5.360	14.800	0.006
3717	LAKE TILLERY	0.040	0.470	468.600	6.827	13.600	0.008
3718	WATERVILLE RESERVOIR	0.103	0.860	468.333	3.817	14.400	0.041
3719	LAKE WACCAMAW	0.018	0.120	455.667	3.583	9.800	0.004

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR NORTH CAROLINA 1/10/75

LAKE CODE 3706 HIGH ROCK RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 10360.0

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
3706A1	9013.2	144.96	159.99	168.20	159.71	123.46	101.37	92.03	103.92	99.11	100.24	95.43	111.85	121.46
3706A2	10360.0	165.04	184.34	194.54	180.66	137.05	112.42	102.51	113.27	109.59	111.00	107.04	126.86	136.75
3706B1	50.8	0.65	1.10	0.88	0.68	0.17	0.25	0.28	0.28	0.11	0.13	0.18	0.37	0.42
3706C1	100.5	1.42	1.81	1.46	1.47	0.76	0.74	0.65	0.54	0.68	0.68	0.74	1.05	1.03
3706D1	41.4	0.45	0.59	0.62	0.45	0.28	0.24	0.21	0.18	0.23	0.23	0.24	0.34	0.34
3706E1	49.2	0.76	0.93	0.93	0.76	0.57	0.51	0.45	0.40	0.48	0.48	0.51	0.62	0.62
3706F1	69.9	1.25	2.15	2.27	1.33	0.59	0.42	0.34	0.24	0.37	0.37	0.42	0.79	0.87
3706G1	46.6	0.54	0.74	0.74	0.53	0.42	0.37	0.34	0.28	0.34	0.34	0.37	0.48	0.47
3706H1	88.1	0.59	0.82	0.85	0.62	0.37	0.28	0.25	0.20	0.28	0.28	0.31	0.42	0.44
3706Z7	900.3	14.58	16.14	16.12	14.89	10.28	8.21	7.70	7.19	8.01	8.21	8.72	10.79	11.04

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 10360.0
SUM OF SUB-DRAINAGE AREAS = 10360.0
TOTAL FLOW IN = 1643.56
TOTAL FLOW OUT = 1644.36

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3706A1	3	73	293.17	24	201.05				
	4	73	255.98	15	182.36				
	5	73	206.15	20	144.70				
	6	73	160.84	24	195.39				
	7	73	121.76	22	117.51				
	8	73	141.58	12	133.94				
	9	73	76.46	16	133.66				
	10	73	86.37	14	77.30				
	11	73	84.95	11	72.49				
	12	73	220.47	2	90.61				
	1	74	240.69	6	199.63	20	119.78		
	2	74	181.23	10	199.07	23	270.99		
3706A2	3	73	297.33	24	226.25				
	4	73	302.99	15	174.40				
	5	73	235.88	20	0.14				
		73	185.44	24	114.40				
		73	141.59	22	76.17				
	8	73	165.37	12	85.80				
	9	73	86.65	16	150.65				
	10	73	96.56	14	0.14				
	11	73	137.60	11	0.14				
	12	73	173.30	2	0.14				
	1	74	274.67	6	239.84	20	207.85		
	2	74	240.69	10	231.35	23	233.61		

TRIBUTARY FLOW INFORMATION FOR NORTH CAROLINA 1/10/75

LAKE CODE 3706 HIGH ROCK RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
370681	3	73	1.31	26	0.64				
	4	73	1.76	15	0.37				
	5	73	0.11	20	0.07				
	6	73	0.21	24	0.17				
	7	73	0.09	22	0.04				
	8	73	0.08	12	0.13				
	9	73	0.03	16	0.02				
	10	73	0.01	14	0.03				
	11	73	0.03	11	0.01				
	12	73	0.71	2	0.00				
	1	74	1.13	6	0.62	20	0.16		
	2	74	1.71	10	1.33	23	1.42		
370601	3	73	3.68	26	2.12				
	4	73	3.54	15	1.47				
	5	73	2.27	20	1.42				
	6	73	1.53	24	1.27				
	7	73	1.27	22	0.99				
	8	73	1.13	12	0.91				
	9	73	0.71	16	0.43				
	10	73	0.71	14	0.62				
	11	73	0.68	11	0.54				
	12	73	1.87	2	0.76				
	1	74	2.41	6	1.87	20	1.02		
	2	74	1.73	10	1.98	23	2.01		
370601	3	73	1.56	26	0.88				
	4	73	1.42	15	0.76				
	5	73	0.99	20	0.57				
	6	73	0.87	24	0.54				
	7	73	0.81	22	0.62				
	8	73	0.68	12	0.37				
	9	73	0.24	16	0.34				
	10	73	0.24	14	0.25				
	11	73	0.24	11	0.24				
	12	73	0.76	2	0.31				
	1	74	1.13	6	0.74	20	0.42		
	2	74	0.71	10	0.79	23	0.82		
370681	3	73	1.96	26	1.13				
	4	73	1.44	15	0.99				
	5	73	1.27	20	0.76				
	6	73	1.02	24	0.71				
	7	73	0.76	22	0.57				
	8	73	0.71	12	0.54				
	9	73	0.62	16	0.51				
	10	73	0.62	14	0.63				
	11	73	0.65	11	0.37				
	12	73	0.98	2	0.45				
	1	74	1.33	6	0.94	20	0.57		
	2	74	0.85	10	1.65	23	1.08		

TRIBUTARY FLOW INFORMATION FOR NORTH CAROLINA 1/10/75

LAKE CODE 3706 HIGH ROCK RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3706F1	3	73	2.55	24	1.47				
	4	73	2.41	15	1.30				
	5	73	1.56	20	0.99				
	6	73	0.99	24	0.88				
	7	73	0.88	22	0.71				
	8	73	0.79	12	0.62				
	9	73	0.68	16	0.59				
	10	73	0.68	14	0.45				
	11	73	0.48	11	0.42				
	12	73	1.13	2	0.62				
	1	74	1.73	6	1.30	20	0.71		
	2	74	1.19	10	1.36	23	1.42		
3706G1	3	73	1.70	24	0.96				
	4	73	1.61	15	0.88				
	5	73	1.04	20	0.65				
	6	73	0.71	24	0.59				
	7	73	0.59	22	0.45				
	8	73	0.54	12	0.42				
	9	73	0.34	16	0.40				
	10	73	0.34	14	0.28				
	11	73	0.31	11	0.28				
	12	73	0.85	2	0.37				
	1	74	1.16	6	0.85	20	0.48		
	2	74	0.73	10	0.91	23	0.93		
3706H1	3	73	3.11	24	1.87				
	4	73	3.11	15	1.64				
	5	73	2.01	20	1.25				
	6	73	1.38	24	1.10				
	7	73	1.10	22	0.88				
	8	73	0.99	12	0.79				
	9	73	0.82	16	0.74				
	10	73	0.82	14	0.57				
	11	73	0.54	11	0.51				
	12	73	1.61	2	0.64				
	1	74	2.15	6	1.61	20	0.88		
	2	74	1.50	10	1.77	23	1.76		
3706Z7	3	73	32.24						
	4	73	31.43						
	5	73	21.53						
	6	73	13.65						
	7	73	11.47						
	8	73	7.36						
	9	73	1.62						
	10	73	1.13						
	11	73	5.66						
	12	73	14.33						
	1	74	22.63						
	2	74	16.99						

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 75/01/07

370601
35 36 06.0 080 14 07.0
HIGH ROCK LAKE
37057 NORTH CAROLINA

11EPALES
3

2111202
0053 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/24	14 05	0000	11.6		10	61	7.30	10K	0.200	0.500	0.490	0.020
	14 05	0006	11.4	8.6		55	7.30	10K	0.190	0.300	0.470	0.021
	14 05	0012	11.5	8.7		51	7.30	10K	0.200	0.400	0.480	0.023
	14 05	0018	11.3	9.0		55	7.30	10K	0.180	0.400	0.450	0.020
	14 05	0025	11.3	8.8		58	7.30	10K	0.190	0.300	0.460	0.022
	14 05	0035	11.1	9.0		58	7.10	10K	0.180	0.400	0.450	0.022
	14 05	0049	10.7	8.8		55	7.20	10K	0.180	0.400	0.420	0.018
73/07/11	15 50	0000	30.9			70	9.30	23	0.140	1.000	0.110	0.005
	15 50	0006	29.0	10.2		68	9.20	23	0.120	0.900	0.100	0.006
	15 50	0015	28.0	7.0		68	7.40	23	0.110	0.800	0.150	0.007
	15 50	0030	25.2	1.2		71	6.50	25	0.270	0.700	0.460	0.014
	15 50	0042	24.6	0.4		75	6.50	25	0.300	0.600	0.440	0.011
	15 50	0052	24.1	0.2		85	6.60	26	0.520	0.900	0.290	0.009
73/09/19	10 40	0000	25.9		40	74	6.90	25	0.070	0.700	0.090	0.011
	10 40	0005	25.9	6.6		74	6.90	23	0.070	0.500	0.080	0.011
	10 40	0015	25.9	6.4		74	6.90	23	0.070	0.500	0.080	0.010
	10 40	0025	25.9	6.0		74	6.80	23	0.120	0.500	0.100	0.012
	10 40	0045	24.7	3.6		76	6.60	23	0.230	0.600	0.320	0.017

K VALUE KNOWN TO <
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/01/07

370601
35 36 06.0 080 14 07.0
HIGH ROCK LAKE
37057 NORTH CAROLINA

11EPALES 2111202
3 0053 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/24	14 05	0000	0.152	5.9
	14 05	0006	0.155	
	14 05	0012	0.156	
	14 05	0018	0.150	
	14 05	0025	0.138	
	14 05	0035	0.149	
	14 05	0049	0.163	
73/07/11	15 50	0000	0.045	24.2
	15 50	0006	0.044	
	15 50	0015	0.039	
	15 50	0030	0.058	
	15 50	0042	0.065	
	15 50	0052	0.077	
73/09/19	10 40	0000	0.042	20.2
	10 40	0005	0.034	
	10 40	0015	0.036	
	10 40	0025	0.039	
	10 40	0045	0.129	

STORET RETRIEVAL DATE 75/01/07

370602
35 38 14.0 080 17 32.0
HIGH ROCK LAKE
37159 NORTH CAROLINA

11EPALES
3

2111202
0034 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 N02&N03 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/24	14	50 0000	11.6		10	60	7.40	10K	0.180	0.600	0.450	0.022
	14	50 0006		9.3		67	7.30	10K	0.150	0.500	0.450	0.026
	14	50 0012	10.7	9.3		55	7.40	10K	0.150	0.300	0.430	0.020
	14	50 0020	10.7	9.4		55	7.30	10K	0.140	0.200	0.420	0.019
	14	50 0030	10.6	9.1		55	7.30	10K	0.160	0.300	0.420	0.018
73/07/12	09	50 0000	27.9		32	63	7.10	22	0.670	0.500	0.240	0.054
	09	50 0006	27.8	6.6		62	7.10	20	0.180	0.600	0.220	0.007
	09	50 0015	27.1	3.6		63	6.60	20	0.130	0.400	0.310	0.009
	09	50 0023	25.6	0.8		69	6.50	21	0.260	0.600	0.360	0.010
73/09/19	10	20 0000	25.3		36	74	7.20	25	0.050	0.700	0.110	0.011
	10	20 0005	25.2	7.8		73	7.00	24	0.050	0.600	0.110	0.013
	10	20 0020	24.6	8.0		70	7.00	22	0.050	0.700	0.160	0.014

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/24	14	50 0000	0.137	4.9
	14	50 0006	0.124	
	14	50 0012	0.120	
	14	50 0020	0.095	
	14	50 0030	0.104	
73/07/12	09	50 0000	0.065	8.7
	09	50 0006	0.041	
	09	50 0015	0.051	
	09	50 0023	0.050	
73/09/19	10	20 0000	0.040	27.5
	10	20 0005	0.047	
	10	20 0020	0.042	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/01/07

370603
35 40 22.0 080 18 53.0
HIGH ROCK LAKE
37057 NORTH CAROLINA

11EPALES
3

2111202
0020 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/24	15 30	0000	11.1		10	65	7.20	10K	0.150	0.600	0.450	0.024
	15 30	0004	10.9	9.3		62	7.20	12	0.100	0.400	0.500	0.020
	15 30	0010	10.5	9.6		62	7.30	12	0.130	0.400	0.540	0.020
	15 30	0016	10.5	9.6		60	7.20	13	0.130	0.300	0.530	0.019
73/07/12	10 30	0000	28.3		30	64	7.70	18	0.360	0.700	0.260	0.009
	10 30	0005	28.1	7.2		66	7.10	17	0.100	0.900	0.310	0.011
	10 30	0011	27.8	6.2		65	6.80	22	0.160	0.500	0.340	0.012
73/09/19	10 00	0000	23.5		28	62	6.50	20	0.070	0.800	0.260	0.015
	10 00	0005	23.3	7.2		61	6.60	28	0.060	0.600	0.280	0.018
	10 00	0015	23.3	3.3		59	6.50	19	0.090	0.600	0.320	0.018

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/24	15 30	0000	0.123	1.4
	15 30	0004	0.138	
	15 30	0010	0.130	
	15 30	0016	0.141	
73/07/12	10 30	0000	0.080	12.6
	10 30	0005	0.077	
	10 30	0011	0.085	
73/09/19	10 00	0000	0.070	19.0
	10 00	0005	0.066	
	10 00	0015	0.095	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/01/07

370604
35 43 15.0 080 19 50.0
HIGH ROCK LAKE
37057 NORTH CAROLINA

11EPALES 2111202
3 0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/24	15 55	0000	12.2		10	67	7.30	10K	0.150	0.400	0.470	0.033
	15 55	0004	10.3	9.8		67	7.20	10K	0.130	0.300	0.460	0.025
73/07/12	11 00	0000	27.2	7.6	24	60	7.40	21	0.080	0.800	0.300	0.018
73/09/19	09 30	0000	23.0	7.2	18	62	6.50	20	0.090	0.900	0.240	0.016
	09 30	0005	23.0	7.0		61	6.50	19	0.070	0.700	0.240	0.014

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/24	15 55	0000	0.119	3.0
	15 55	0004	0.118	
73/07/12	11 00	0000	0.092	17.3
73/09/19	09 30	0000	0.096	26.7
	09 30	0005	0.077	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 75/01/13

370641 LS3706A1
35 43 00.0 080 23 30.0
YADKIN RIVER
37003 MAP DAVIDSON CO
I/HIGH ROCK RESVR
HWY 150/29/70 BRDG 12 MI NEOF LEXINGTON
11FPALES 2111204
0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11 43		0.420	0.400	0.075	0.046	0.115
73/04/15	12 00		0.340	0.420	0.060	0.048	0.105
73/05/20	11 47		0.365	0.520	0.044	0.054	0.125
73/06/24	11 45		0.550	0.950	0.102	0.056	0.330
73/07/22	13 20		0.390	1.100	0.054	0.058	0.130
73/08/12	13 23		0.461	1.000	0.420	0.060	0.240
73/10/14	08 50		0.420	1.150	0.154	0.105	0.250
73/11/11	09 30		0.220	0.400	0.088	0.112	0.340
73/12/02	10 47		0.350	0.800	0.124	0.112	0.195
74/01/06	11 22		0.480	0.400	0.042	0.040	0.110
74/01/20	10 26		0.480	1.000	0.160	0.080	0.170
74/02/10	11 30		0.450	1.300	0.070	0.045	0.180
74/02/23	10 30		0.446	1.300	0.110	0.040	0.430

START RETRIEVAL DATE [illegible]

[illegible]AP [illegible]5370[illegible]AP
[illegible] 00.0 086 14 00.0
YADKIN RIVER
[illegible] MAP DAVIDSON CO
[illegible]OMEGA ROCK RESVR
SECONDARY RD 1002 BRDG JUSTBELO DAM
11ERALES 2111204
[illegible] 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	NO[illegible] N-TOTAL MG/L	[illegible] TOT [illegible] MG/L	[illegible] TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	1[illegible]	45	[illegible].3[illegible]	0.[illegible]	0.[illegible]26	0.052	0.135
73/04/1[illegible]	10	40	0.370	0.[illegible]	0.113	0.042	0.095
73/05/2[illegible]	[illegible]9	40	0.[illegible]57	0.[illegible]	0.143	0.016	0.055
73/[illegible]6/24	10	00	0.315	0.[illegible]	0.170	0.025	0.100
73/07/22	13	00	0.315	2.100	0.231	0.028	0.110
73/08/13	11	10	0.290	1.100	0.[illegible]56	0.024	0.150
73/13/1[illegible]	09	30	0.300	1.000	0.140	0.021	0.055
73/11/11	09	00	0.240	[illegible].450	0.072	0.024	0.065
73/12/0[illegible]	10	[illegible]3	0.[illegible]8	[illegible].900	0.192	0.032	0.095
74/[illegible]/[illegible]5	[illegible]0	[illegible]3	0.490	1.000	0.116	0.046	0.140
74/01/20	13	05	0.470	[illegible].900	0.108	0.040	0.050
74/02/10	[illegible]4	55	0.470	1.200	0.110	0.040	0.135
74/02/2[illegible]	10	00	[illegible].430	0.500	0.136	0.040	0.110

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STORET RETRIEVAL DATE 75/01/13

3706R1 LS3706R1
35 41 00.0 080 09 00.0
FLAT SWAMP CREEK
37 MAP DAVIDSON CO
T/HIGH ROCK RESVR
SECONDARY RD 2357 BRDG 4 MINW OF DENTON
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	10 30		0.050	0.300	0.011	0.017	0.025
73/04/15	10 20		0.040	0.230	0.005K	0.009	0.015
73/05/20	09 45		0.086	0.300	0.031	0.009	0.025
73/06/24	09 40		0.310	0.660	0.048	0.022	0.050
73/07/22	14 05		0.240	1.470	0.063	0.019	0.035
73/08/12	09 30		0.132	1.100	0.330	0.012	0.015
73/10/14	09 40		0.010K	1.350	0.051	0.007	0.010
73/11/11	08 30		0.048	0.550	0.032	0.008	0.015
73/12/02	10 10		0.012	0.700	0.036	0.008	0.010
74/01/06	10 45		0.490	0.600	0.040	0.020	0.045
74/01/20	09 40		0.044	0.500	0.036	0.008	0.010
74/02/10	09 45		0.240	0.400	0.020	0.015	0.040
74/02/23	09 40		0.160	0.600	0.085	0.020	0.055

K VALUE KNO N TO
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/01/13

3706C1 LS3706C1
35 44 00.0 080 18 30.0
SWEARING CREEK
37 MAP DAVIDSON CO
T/HIGH ROCK RESVR
UPSTREAM RD 1272 BRDG .3 SEJERSEY CHURCH
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11 05		0.490	0.460	0.035	0.120	0.240
73/04/15	10 55		0.440	0.500	0.038	0.170	0.290
73/05/20	10 10		1.200	0.880	0.160	0.420	0.600
73/06/24	10 15		0.830	1.050	0.105	0.190	0.350
73/07/22	13 45		2.100	5.100	2.000	0.370	0.560
73/08/12	10 00		0.770	0.840	0.390	0.270	0.375
73/10/14	09 10		0.890	0.650	0.046	0.540	0.850
73/11/11	08 50		0.810	0.350	0.028	0.552	0.670
73/12/02	10 21		1.360	0.500	0.028	0.690	0.805
74/01/06	11 00		0.660	0.800	0.128	0.168	0.345
74/01/20	10 02		0.640	1.200	0.370	0.288	0.450
74/02/10	10 30		0.630	2.300	0.135	0.150	0.335
74/02/23	10 05		0.540	0.800	0.055	0.115	0.375

STORET RETRIEVAL DATE 75/01/13

370601 LS3706D1
35 45 00.0 080 21 00.0
FIRST POTTS CREEK
37 MAP DAVIDSON CO
T/HIGH ROCK RESVR
BANK 45 FT BELO HWY 29 BRDG SE OF LXNGTN
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11	30	0.340	0.190	0.022	0.024	0.035
73/04/15	11	30	0.340	0.260	0.023	0.015	0.035
73/05/20	10	30	0.400	0.260	0.031	0.019	0.045
73/06/24	10	30	0.290	0.370	0.038	0.024	0.055
73/07/22	13	35	0.360	0.340	0.044	0.019	0.040
73/08/12	10	12	0.380	1.050	0.105	0.022	0.025
73/10/14	08	55	0.340	0.500	0.030	0.029	0.040
73/11/11	09	05	0.216	0.650	0.032	0.007	0.020
73/12/02	10	31	0.312	0.500	0.028	0.008	0.025
74/01/06	11	12	0.528	0.700	0.052	0.016	0.060
74/01/20	10	15	0.420	0.600	0.054	0.010	0.030
74/02/10	11	00	0.460	0.600	0.060	0.015	0.050
74/02/23	10	20	0.370	0.200	0.030	0.015	0.055

STORET RETRIEVAL DATE 75/01/13

3706E1 LS3706E1
35 41 00.0 080 24 30.0
IJAN CREEK
37 MAP ROWAN CO
T/HIGH ROCK RESVR
US 85 BRDG 2.5 MI SSW OF YADKIN RIVER
11EPALFS 2111204
" 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11	55	2.700	1.470	0.126	1.180	1.400
73/04/15	11	45	2.400	1.320	0.189	1.000	1.250
73/05/20	11	45	3.100	3.000	0.690	0.680	0.780
73/06/24	11	55	4.100	1.200	0.154	0.550	0.650
73/07/22	15	00	2.900	2.200	0.086	0.430	1.050
73/08/12	12	00	3.600	1.470	0.105	0.540	0.600
73/10/14	11	30	7.200	1.950	0.097	3.000	3.480
73/11/11	10	15	6.800	2.300	0.120	3.400	3.850
73/12/02	12	00	7.900	3.200	1.010	7.600	8.700
74/01/06	11	30	2.300	1.400	0.560	0.730	0.934
74/01/20	11	15	6.300	3.200	1.720	2.400	3.150
74/02/10	11	00	0.470	1.000	0.070	0.035	0.090
74/02/23	12	20	0.940	1.450	0.240	0.520	0.810

STORET RETRIEVAL DATE 75/01/13

3706F1 LS3706F1
35 40 30.0 080 24 30.0
CRANE CREEK
37 MAP ROWAN CO
T/HIGH ROCK RESVR
RD 1915 ABOU 1 MI E OF EASTSPENCER
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11 45		0.350	0.400	0.072	0.044	0.065
73/04/15	11 30		0.336	0.240	0.044	0.048	0.085
73/05/20	10 30		0.760	0.460	0.069	0.100	0.145
73/06/24	11 20		0.620	0.460	0.034	0.097	0.140
73/07/22	14 40		0.540	0.900	0.049	0.110	0.140
73/08/12	12 00		0.750	1.260	0.120	0.190	0.220
73/10/14	11 00		0.510	1.200	0.088	0.357	0.390
73/11/11	10 00		0.312	0.400	0.020	0.368	0.375
73/12/02	11 30		0.450	0.400	0.016	0.300	0.310
74/01/06	11 25		0.552	0.100	0.076	0.065	0.120
74/01/20	10 35		0.610	0.300	0.055	0.120	0.175
74/02/10	12 06		1.430	2.200	0.370	0.620	0.945
74/02/23	11 40		0.380	0.500	0.080	0.025	0.105

STORET RETRIEVAL DATE 73/01/13

370661 L5370661
35 35 00.0 080 23 00.0
UNNAMED CREEK
37 063 ROWAN CO
T/HIGH ROCK RESVR
RD 1002 ARDG 1.5 MI W PROVIDENCE CHURCH
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11	30	0.110	0.170	0.042	0.020	0.025
73/04/15	11	15	0.100	0.210	0.040	0.017	0.025
73/05/20	11	00	0.117	0.270	0.044	0.018	0.045
73/06/24	10	55	0.130	0.300	0.037	0.023	0.035
73/07/22	14	25	0.120	1.540	0.072	0.033	0.040
73/08/12	11	45	0.154	0.800	0.126	0.048	0.060
73/10/14	10	30	0.040	0.275	0.026	0.024	0.035
73/11/11	09	45	0.020	1.000	0.028	0.024	0.035
73/12/02	11	45	0.032	0.400	0.044	0.024	0.075
74/01/06	11	10	0.224	0.100	0.028	0.020	0.035
74/01/20	10	45	0.152	0.200	0.030	0.020	0.030
74/02/10	10	35	0.152	0.300	0.015	0.015	0.030
74/02/23	11	00	0.140	0.300	0.030	0.015	0.030

STORET RETRIEVAL DATE 75/01/13

370641 LS370641
35 39 00.0 080 22 00.0
SECOND CREEK
37 MAP ROWAN CO
T/HIGH ROCK RESVR
RD 2370 BRDG 2 MI E OF ROCKWELL
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/24	11	10	0.357	0.380	0.050	0.050	0.085
73/04/15	11	03	0.360	2.100	0.132	0.065	0.110
73/05/20	10	05	0.620	1.300	0.340	0.078	0.130
73/06/24	10	20	0.510	1.890	0.126	0.073	0.152
73/07/22	14	10	0.470	1.600	0.098	0.078	0.135
73/08/12	11	25	0.600	0.840	0.190	0.110	0.175
73/10/14	10	00	0.294	0.750	0.038	0.168	0.280
73/11/11	09	30	0.060	0.300	0.020	0.184	0.250
73/12/02	10	30	0.120	0.600	0.026	0.172	0.230
74/01/06	11	00	0.730	0.330	0.068	0.080	0.135
74/01/20	10	30	0.560	0.200	0.032	0.084	0.115
74/02/10	10	50	0.600	0.800	0.050	0.045	0.115
74/02/23	10	30	0.420	0.500	0.035	0.035	0.120

STORET RETRIEVAL DATE 75/01/13

3706AA TF3706AA P002000
35 35 00.0 080 35 00.0
CHINA GROVE NC
37003 ROWAN CO NC HWY
T/HIGHROCK RES
GRANTS CREEK/YADKIN RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/10	11 00								
CP(T)-			1.900	8.100	0.320	4.600	6.400	0.300	0.327
73/05/10	16 00								
73/06/06	10 45								
CP(T)-			1.300	12.400	0.900	7.200	9.100	0.273	0.357
73/06/06	15 30								
73/07/12	10 30		0.480	9.100	0.670	5.300	7.500	0.200	0.316
73/08/14	10 10								
CP(T)-			0.520	10.500	0.630	2.600	9.500	0.189	0.233
73/08/14	16 15								
73/09/19	09 05								
CP(T)-			0.740	10.500	2.300	9.420	10.600	0.152	0.208
73/09/19	15 10								
73/10/11	10 30								
CP(T)-			1.600	8.100	0.245	9.250	9.400	0.164	0.188
73/10/11	15 45								
73/11/14	09 00								
CP(T)-			3.570	13.500	1.760	8.800	11.000	0.102	0.145
73/11/14	14 30								
73/12/11	10 09								
CP(T)-			2.500	12.000	0.580	7.100	9.900	0.110	0.164
73/12/11	15 30								
74/01/03	10 45								
CP(T)-			1.240	14.000	3.000	3.600	5.800	0.176	0.208
74/01/04	16 00								
74/02/19	08 30								
CP(T)-			0.640	13.000	2.100	7.330	7.350	0.325	0.350
74/02/19	15 00								
74/03/12	09 45								
CP(T)-			0.240	15.000	3.600	5.400	8.300	0.157	0.208
74/03/12	16 25								
74/04/10	08 40								
CP(T)-			2.160	3.500	1.150	2.200	3.300	0.162	0.198
74/04/10	15 20								
74/05/15	09 45								
CP(T)-			0.400	8.000	2.600	5.000	6.200	0.197	0.214
74/05/15	16 00								

STORET RETRIEVAL DATE 75/01/13

3706EA AS3706EA P010000*
35 41 30.0 080 25 00.0
TOWN CR SALISBURY NC
37 ROWAN CO NC HWY
T/HIGHROCK RES
TOWN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/14			12.900	1.400	0.290	3.000	3.500	3.100	3.600
73/06/18			4.400	4.400	2.000	3.000	3.200	3.200	3.600
73/07/23 00 00									
CP(T)-			3.800	2.300	0.130	2.950	3.300	3.700	3.900
73/07/23 24 00									
73/08/27 00 00									
CP(T)-			10.700	2.100	0.260	3.440	4.100	3.200	3.600
73/08/27 24 00									
73/09/17 00 00									
CP(T)-			7.200	1.300	0.128	4.760	5.000	3.470	3.400
73/09/17 24 00									
73/11/19 00 00									
CP(T)-			28.000	12.500		6.300	7.300	3.600	3.400
73/11/19 24 00									
73/12/18 00 00									
CP(T)-			7.300	3.400	0.160	1.600	2.700	3.280	3.430
73/12/18 24 00									
74/04/17 01 00									
CP(T)-			20.000	5.600	1.780	4.050	5.300	3.900	4.200
74/04/17 24 00									
74/05/15 01 00									
CP(T)-			21.000	5.800	0.440	3.750	5.200	3.600	3.800
74/05/15 24 00									
74/06/18 01 00									
CP(T)-			14.400	6.300	0.340	3.350	4.400	3.400	3.800
74/06/18 24 00									
74/07/18 00 00									
CP(T)-			6.500	3.800	0.225	1.900	1.900	3.400	3.900
74/07/18 24 00									
64/08/14 24 00									
CP(T)-			3.800	1.200	0.140	1.450	1.600	3.800	4.100
74/08/14 23 00									
74/09/19 01 00									
CP(T)-			22.000	5.400	0.610	5.100	6.770	3.360	3.450
74/09/19 24 00									

STORET RETRIEVAL DATE 75/01/13

3706MA TF3706MA P000725*
35 33 00.0 080 24 30.0
ROCKWELL NC
37 ROWAN CO NC HWY
T/HIGHROCK RES
SECOND CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/29	11 00								
CP(T)-			5.400	19.700	8.200	10.600	15.000	0.080	0.080
73/06/29	16 00								
73/07/27	11 00								
CP(T)-			5.200	14.000	3.200	8.000	10.000	0.082	0.082
73/07/27	16 00								
73/08/31	11 00								
CP(T)-				22.100	7.300			0.081	0.081
73/08/31	16 00								
73/09/28	11 00								
CP(T)-			6.500	11.200	4.700	12.300	12.300	0.080	0.080
73/09/28	16 00								
73/10/31	11 00								
CP(T)-			8.200	10.000	2.000	9.000	11.500	0.110	0.108
73/10/31	16 00								
73/11/28	11 00								
CP(T)-			6.800	18.500	6.400	7.100	9.850	0.080	0.080
73/11/28	16 00								
73/12/27	10 30								
CP(T)-			6.400	9.750	2.730	8.300	9.350	0.080	0.080
73/12/27	15 30								
74/01/29	10 00								
CP(T)-			3.520	7.700	2.800	1.920	4.100	0.085	0.092
74/01/29	15 00								
74/02/27	11 00								
CP(T)-			5.100	8.200	2.000	6.500	7.100	0.093	0.087
74/02/27	15 00								
74/03/28	10 00								
CP(T)-			5.800	19.000	6.700	7.300	10.500	0.123	0.123
74/03/28	15 00								
74/04/29	07 00								
CP(T)-			9.000	26.000	9.100	7.350	8.600	0.123	0.123
74/04/29	14 00								

STORET RETRIEVAL DATE 75/01/20

3706JA AS3706JA P015000*
35 39 30.0 080 30 40.0
GRANTS CREEK SALISBURY NC
37 ROWAN CO NC HWY
T/HIGHROCK RES
GRANTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/18	00	00							
CP(T)-			0.485	12.000	4.800	3.700	4.700	3.900	4.000
73/05/18	24	00							
73/06/18			0.210	12.600	2.400	5.000	6.000	3.500	3.700
73/07/23	00	00							
CP(T)-			0.880	8.900	0.810	3.000	4.400	3.900	3.700
73/07/23	24	00							
73/08/27	00	00							
CP(T)-			1.700	23.000	6.000	5.400	7.600	3.400	3.600
73/08/27	24	00							
73/09/17	00	00							
CP(T)-			1.860	13.000	5.450	6.700	7.900	3.390	3.500
73/09/17	24	00							
73/11/19	00	00							
CP(T)-			2.700	18.500	6.900	7.100	8.400	3.400	3.200
73/11/19	24	00							
73/12/18	00	00							
CP(T)-			2.080	19.000	3.300	3.900	6.200	3.670	3.540
73/12/18	24	00							
74/04/17	01	00							
CP(T)-			7.700	2.900	1.250	3.200	4.200	3.600	3.900
74/04/17	24	00							
74/05/15	01	00							
CP(T)-			6.720	4.000	1.100	3.400	4.200	3.200	3.600
74/05/15	24	00							
74/06/18	01	00							
CP(T)-			12.600	3.200	0.310	5.800	6.400	2.800	
74/06/18	24	00							
74/07/18	00	00							
CP(T)-			8.400	1.300	0.510	5.750	6.300	3.200	3.400
74/07/18	24	00							
74/08/14	24	00							
CP(T)-			2.800	2.200	0.050K		3.600	3.600	3.900
74/08/15	23	00							
74/09/19	01	00							
CP(T)-				4.630		5.100	6.000	3.290	3.480
74/09/19	24	00							

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/01/20

3706KA AS3706KA P016000*
35 52 00.0 080 05 00.0
THOMASVILLE NC
37 DAVIDSON CO NC H
T/HIGHROCK LAKE
HAMBY CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/08	08 00								
CP(T)-			0.015	25.000	9.600	8.100	10.000	2.470	2.000
73/05/08	15 00								
73/06/29	08 00								
CP(T)-			0.170	13.000	2.400	3.360	5.300	2.740	2.050
73/06/29	15 00								
73/07/25	08 00								
CP(T)-			0.130	19.000	5.900	7.700	9.400	1.870	1.850
73/07/25	15 00								
73/08/31	08 00								
CP(T)-			0.050	20.000	7.300	8.820	9.650	1.660	1.610
73/08/31	15 00								
73/09/28	08 00								
CP(T)-			13.000	3.600	0.710	10.000	10.000	1.570	1.720
73/09/28	15 00								
73/10/31	08 00								
CP(T)-			9.400	6.600	0.690	6.600	9.300	1.780	1.650
73/10/31	16 00								
73/11/28	08 00								
CP(T)-			1.300	11.300	0.060	9.800	11.000	1.870	1.680
73/11/28	15 00								
73/12/26	08 00								
CP(T)-			11.000	2.800	0.190	5.700	6.300	1.720	1.940
73/12/26	15 00								
74/01/31	08 00								
CP(T)-			3.400	3.700	2.100	4.800	6.800	2.290	2.350
74/01/31	15 00								
74/03/28	08 00								
CP(T)-			4.400	8.200	2.200	6.100	7.000	2.300	2.020
74/03/28	15 00								
74/04/30	08 00								
CP(T)-			3.680	12.000	3.900	7.900	8.700	2.140	2.250
74/04/30	15 00								
74/05/31	08 00								
CP(T)-			4.600	5.700	1.350	5.300	6.200	2.080	2.300
74/05/31	15 00								

STORET RETRIEVAL DATE 75/01/20

3706KA AS3706KA P016000*
35 52 00.0 080 05 00.0
THOMASVILLE NC
37 DAVIDSON CO NC H
T/HIGHROCK LAKE
HAMBY CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/06/28	08 00								
CP(T)-			14.400	6.900	1.450	7.200	8.200	1.850	2.050
74/06/28	15 00								

STORET RETRIEVAL DATE 75/01/13

3706LA AS3706LA 0002300*
35 33 00.0 080 36 30.0
LANDIS NC
37 ROWAN CO NC HWY
T/HIGHROCK RES
GRANTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/05	08	30						1.110	0.716
73/05/31	08	00							
CP(T)-			0.089	15.000	1.940	12.790	15.000	0.850	0.787
73/05/31	15	00							
73/07/09	09	00	2.730	22.000	4.300	10.500	14.000	0.273	0.840
73/07/31	09	00							
CP(T)-			0.340	10.500	4.100	9.050	12.500	0.890	0.698
73/07/31	15	00							
73/08/31	09	00	0.060	10.000	0.180	18.000	18.000	0.947	0.861
73/12/04	09	00	0.120	6.300	0.063	20.000	21.000	0.956	0.776
74/01/05	08	30	0.120	7.900	0.160	15.000	15.000	1.110	0.716
74/02/05	09	00	1.520	5.000	1.080	13.200	14.000	0.768	0.716
74/03/06	08	00							
CP(T)-			0.280	7.600	0.920	14.000	14.500	0.793	0.718
74/03/06	16	00							
74/04/03	15	30	0.080	6.500	0.710	14.500	16.000	0.818	0.750
74/05/07	09	15	3.120	7.700	1.500	13.500	17.300	0.750	0.728
74/08/08	14	00	0.080	9.350	0.520	21.000	22.000	1.050	0.647
74/09/04	09	30	4.060	7.100	0.900	12.500	14.000	0.700	0.600

STORET RETRIEVAL DATE 75/01/20

3706MA AS3706MA P004600*
35 47 30.0 080 12 00.0
LEXINGTON-ABBOTS CREEK #1
37 DAVIDSON CO NC H
T/HIGHROCK RES
ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/09	24	00							
CP(T)-			9.700	1.950	0.360	8.600	8.900	0.900	0.930
73/05/10	23	00							
73/06/20	13	00							
CP(T)-			9.200	1.760	0.240	7.800	8.000	0.870	0.900
73/06/20	24	00							
73/08/02	01	00							
CP(T)-			9.800	0.980	0.066	3.450	7.820	0.950	0.760
73/08/02	24	00							
73/09/24	01	00							
CP(T)-			24.000	1.150	0.330	13.700	13.700	0.710	0.840
73/09/24	24	00							
73/10/16	01	00							
CP(T)-			12.600	3.000	0.110	3.000	5.100	0.680	0.840
73/10/16	24	00							
73/11/12	13	00							
CP(T)-			13.400	12.500	3.100	10.000	14.500	0.540	0.700
73/11/12	24	00							
74/01/03	01	00							
CP(T)-			12.600	1.700	0.046	5.200	5.900	0.740	0.700
74/01/04	24	00							
74/02/14	01	00							
CP(T)-			8.800	1.000K	0.099	6.300	6.400	0.860	0.740
74/02/14	24	00							
74/03/11	01	00							
CP(T)-			1.160	1.600	0.240	6.900	7.200	0.510	0.870
74/03/11	24	00							
74/04/02	01	00							
CP(T)-			9.000	1.100	0.064	7.300	8.100	0.950	0.610
74/04/02	24	00							
74/05/07	01	00							
CP(T)-			12.600	2.300	0.120	8.100	9.700	0.710	0.800
74/05/07	24	00							
74/06/04	01	00							
CP(T)-			14.300	1.900	0.050K	7.900	8.100	0.680	0.900
74/06/04	24	00							

A VALUE K [illegible]
LESS THAN [illegible]

STORET RETRIEVAL DATE 75/01/20

3706MA AS3706MA P004600*
35 47 30.0 080 12 00.0
LEXINGTON-ABBOTS CREEK #1
37 DAVIDSON CO NC H
T/HIGHROCK RES
ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/07/09 CP(I)- 74/07/09	01 00 24 00		17.600	1.000K	0.078	10.500	12.000	0.830	0.860

3706MR AP3706MR P0040000*
35 47 +0.0 0M0 12 10.0
LEXINGTON-ABBOTS CREEK #2
37 DAVIDSON CO N MP
T/HIGH ROCK RESERVOIR
ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00631 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/09	24	00							
CP(T)-			7.400	3.000	0.320	9.300	9.400	1.040	1.420
73/05/10	24	00							
73/05/23	13	00							
CP(T)-			12.300	2.200	0.200	7.600	7.900	0.830	1.010
73/05/30	24	00							
73/06/02	01	00							
CP(T)-			14.200	0.910	0.098	13.500	29.000	1.190	0.910
73/06/03	24	00							
73/09/24	01	00							
CP(T)-			14.000	1.950	0.220	12.600	12.600	0.590	0.790
73/10/24	24	00							
73/10/15	01	00							
CP(T)-			16.000	3.100	0.085	3.150	6.800	0.550	0.790
73/10/15	24	00							
73/11/12	13	00							
CP(T)-			12.400	12.800	1.900	12.600	14.500	0.450	0.720
73/11/12	24	00							
74/01/03	01	00							
CP(T)-			6.800	1.200	0.040<	3.500	3.600	1.560	1.400
74/01/03	24	00							
74/02/14	01	00							
CP(T)-			9.400	3.100	0.440	4.900	5.300	0.650	1.060
74/02/14	24	00							
74/03/11	01	00							
CP(T)-			13.800	3.600	1.050	6.800	7.600	0.740	1.100
74/03/11	24	00							
74/04/02	01	00							
CP(T)-			9.500	1.300	0.050<	5.900	6.500	0.640	0.820
74/04/02	24	00							
74/05/07	01	00							
CP(T)-			20.800	2.000	0.140	15.000	15.700	0.540	0.910
74/05/07	24	00							
74/06/04	01	00							
CP(T)-			14.200	2.000	0.050<	8.700	8.700	0.840	0.840
74/06/04	24	00							

< VALUE KNOWN TO BE
LESS THAN INDICATED

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STORET RETRIEVAL DATE 75/01/13

3705MB AP3706MB P0040009
35 47 40.0 080 12 10.0
LEXINGTON-ABBOTS CREEK #2
37 DAVIDSON CO H MP
T/HIGH ROCK RESERVOIR
ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/07/03 01 00 CP(T)- 74/07/04 24 00			21.000	3.350	0.110	12.500	14.000	1.140	0.520

STORET RETRIEVAL DATE 75/01/14

3706NA AS3706NA P017000*
35 59 30.0 080 02 30.0
WEST PLANT HIGH POINT NC
37 DAVIDSON CO NC H
1/HIGHROCK RES
RICH FORK/ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/14	07	00							
CP(T)-			0.210	23.100	2.200	5.200	6.400	3.300	3.500
73/05/15	07	00							
73/06/12	07	00							
CP(T)-			0.160	29.000	2.260	4.880	6.400	3.400	3.350
73/06/13	07	00							
73/07/11	07	00							
CP(T)-			0.480	20.000	3.900	5.000	6.300	3.800	3.000
73/07/11	19	00							
73/08/14	07	00							
CP(T)-			0.200	23.100	5.700	3.150	4.000	3.200	2.800
73/08/15	08	00							
73/09/13	07	00							
CP(T)-			0.370	27.300	9.300	7.240	7.750	3.100	2.800
73/09/14	07	00							
73/10/18	07	00							
CP(T)-			0.294	27.000	10.800	8.200	8.800	2.900	2.800
73/10/19	07	00							
73/11/14	07	00							
CP(T)-			0.580	17.000	3.400	5.300	6.200	2.800	2.750
73/11/15	07	00							
73/12/13	07	00							
CP(T)-			0.980	16.000	1.100	6.400	7.400	3.000	3.000
73/12/14	07	00							
74/01/16	07	00							
CP(T)-			0.160	14.500	3.300	5.700	7.150	3.600	3.900
74/01/17	07	00							
74/02/12	07	00							
CP(T)-			0.720	8.400	2.700	4.500	4.800	4.300	3.800
74/02/13	07	00							
74/03/15	07	00							
CP(T)-			0.960	26.000	4.200	5.600	6.950	3.500	3.600
74/03/15	07	00							
74/04/17	07	00							
CP(T)-			1.600	16.000	3.100	5.100	6.700	3.900	4.100
74/04/18	07	00							

STORET RETRIEVAL DATE 75/01/13

3706NA AS3706NA P017000*
35 59 30.0 080 02 30.0
*EST PLANT HIGH POINT NC
37 DAVIDSON CO NC H
T/HIGHROCK RES
HICH FORK/ABBOTS CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/05/15 07 00 CP(T)- 74/05/16 07 00			1.760	16.000	5.900	3.300	4.200	4.500	3.500

STORET RETRIEVAL DATE 75/01/13

3706PA SF3706PA P000022
35 59 30.0 080 02 30.0
COUNTRY CLUB HIGH POINT NC
37 DAVIDSON CO NC M
1/HIGHROCK RES
HICH FK/ABBOTS CR
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/05/16	15	30	19.200	1.100	0.260	6.200	6.300	0.002	0.002
73/06/13	15	45	22.400	1.150	0.480	10.000	10.500	0.001	0.001
73/07/12	15	30	14.000	1.800	0.430		8.100	0.001	0.001
73/08/15	15	30	18.200		0.280	9.300		0.001	0.001
73/09/18	15	30	8.500	1.600	0.210	13.200	13.200	0.001	0.001
73/10/16	15	30	7.900	2.600	0.190	12.800	12.800	0.001	0.001
74/01/11	15	30	13.400	0.680	0.240	5.700	6.000	0.001	0.001
74/02/13	15	00	14.000	1.000K	0.110	4.700	4.700	0.001	0.001
74/03/13	15	30	22.000	1.400	0.050K		4.300	0.001	0.001
74/04/17	15	30	19.200	1.000K	0.170	5.900	6.500	0.001	0.001
74/06/28	12	00	16.200	2.800	0.160	8.400	9.500	0.001	0.001
74/07/15	15	00	7.200	1.000K	0.072	10.500	11.000	0.001	0.001
74/08/12	15	00	10.100	2.300	0.270	6.100	6.400	0.001	0.001

K VALUE KNOWN TO BE
LESS THAN INDICATED

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STREET RETRIEVAL DATE 75/01/13

3706XA AS3706XA P001800
35 48 50.0 080 38 20.0
BURLINGTON INDUSTRIES / COOLEEMEE
37 250 CHARLOTTE NC
T/HIGH ROCK LAKE
SOUTH YADKIN RIVER / YADKIN RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/26	11 00								
CP(I)-			4.400	1.450	0.130	3.000	3.000	0.400	0.400
73/06/26	15 00								
73/07/23	10 00								
CP(I)-			4.100	5.200	0.200	3.900	4.450	0.400	0.400
73/07/23	15 00								
73/08/20	11 00								
CP(I)-			3.400	4.100	0.470	5.240	5.800	0.400	0.400
73/08/20	15 00								
73/09/19	11 00								
CP(I)-			7.200	4.225	0.048	4.100	4.800	0.400	0.400
73/09/19	15 00								
73/10/30	10 00								
CP(I)-			3.300	5.400	0.073	1.760	2.750	0.400	0.400
73/10/30	15 00								
73/11/26	11 00								
CP(I)-			3.630	7.600	3.700	3.500	5.000	0.400	0.400
73/11/26	15 00								
73/12/23	11 00								
CP(I)-			5.830	4.400	0.020	2.200	3.100	0.400	0.400
73/12/23	15 00								
74/01/22	11 00								
CP(I)-			2.760	5.130	0.200	2.320	2.750	0.400	0.400
74/01/22	15 00								
74/02/27	11 00								
CP(I)-			2.844	7.450	0.050*	1.200	1.600	0.400	0.400
74/02/27	15 00								
74/03/25	11 00								
CP(I)-			3.1*	5.230	0.220	1.400	2.500	0.400	0.400
74/03/25	15 00								
74/04/22	11 00								
CP(I)-			4.400	6.400	0.150	1.930	2.430	0.400	0.400
74/04/22	15 00								

* VALUE = 0.05 OR LESS THAN INDICATED